

“Science and Engineering Workforce.”) These studies generally reached the following conclusions:

- ◆ **During 1996–2000, the IT labor market was somewhat tighter than the overall labor market.** Existing data, however, cannot prove or disprove that such a shortage existed. Federal data are limited by untimely reporting, out-of-date occupational descriptions, and incompatibilities in supply-and-demand data collected by different agencies.
- ◆ **The IT labor market is not homogeneous.** Supply-and-demand characteristics vary by region, industry segment, and specific skill. Because IT product cycle times are very fast, the industry pays a premium for people who already have specific current skills and do not require training to be effective. Competition is especially intense for people with specific “hot” skills in specific markets.
- ◆ **People enter IT careers in a variety of ways.** IT workers include people who majored in IT-related disciplines at the associate, bachelor’s, master’s, and doctoral degree levels; people from other science, engineering, and business fields; and people from nontechnical disciplines who have taken some courses in IT subjects. Many IT workers enter the field through continuing education programs and for-profit schools. Workers are taking advantage of new modes of instruction delivery such as distance learning.

Labor markets tend to be cyclical. In response to the tight conditions in the IT labor market during 1996–2000, wage increases attracted more people to the field, and many initiatives around the country were set up to help expand the IT workforce. Slower growth and even layoffs in the IT industry have also reduced demand for IT workers.

Conclusion

IT continues to develop rapidly as the key underlying technologies of semiconductors, disk drives, and network communications improve at exponential rates. Constant improvements in the underlying technologies make possible new IT applications that affect all areas of society, including the economy, households, government, and the R&D enterprise.

Throughout society, the utility of IT applications tends to advance much more slowly than the underlying technologies. A doubling of processing speeds, for example, does not bring a doubling of utility. The effective implementation and use of IT are the result of a complex process that requires not only adoption of a technology but also changes in organizations and institutions. As part of this process, individuals and organizations actively adapt (and sometimes resist) the technologies. As a result, the effects of IT on society often take place more slowly than visionaries predict. Nevertheless, the effects—driven by the continual change in underlying technologies—are substantial over time.

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